THE Hafler™ PRO6000

PROFESSIONAL POWER AMPLIFIER

INSTALLATION AND OPERATION

BF 2CW

W Gray Face
+ 1/4 plugs
+ Balanced Inputs

HAFLER
A DIVISION OF
ROCKFORD CORPORATION
613 SOUTH ROCKFORD DRIVE TEMPE, ARIZONA 85281

Please refer to this serial number in all communications regarding this equipment.

SPECIFICATIONS

8 Ohm Power Rating: 300 watts continuous average power per channel at less than 0.1% total harmonic distortion from 20 HZ to 20 KHZ with both channels driven.

4 Ohm Power Rating: 500 watts continuous average power per channel at less than 0.1% total harmonic distortion from 20 HZ to 20 KHZ with both channels driven.

2 Ohm Power Rating: 640 watts continuous average power per channel at less than 0.1% total harmonic distortion from 20 HZ to 20 KHZ with both channels driven.

8 Ohm Bridged Power Rating: 1000 watts continuous average power at less than 0.1% total harmonic distortion from 20 HZ to 20 KHZ.

4 Ohm Bridged Power Rating: 1300 watts continuous average power at less than 0.1% total harmonic distortion from 20 HZ to 20 KHZ.

Peak Output Current: 50 Amperes

IM Distortion (IHF): Less than 0.01% from 1 watt to 300 watts with both channels driven into 8 Ohms.

Frequency Response Into 8 Ohms from 20 HZ to 20 KHZ: +0.1, -0.25 db

Power Bandwidth: 5 HZ to 75KHZ

Signal to Noise Ratio (unweighted): Exceeds 110db with respect to full power.

Damping Factor: Greater than 500

Slew Rate: 75 V/ms

Hum and Noise: 100db below full power, A weighted.

Input Impedance: 40,000 Ohms, balanced

Input Sensitivity: 0-36db adjustable. .775V for 300 watts

Power Consumption 120V 60HZ line: 1 amp at idle, 10 amps at 8 Ohms 1KHZ at clipping and 15 amps at 4 Ohms 1 KHZ at clipping.

Dimensions: 19" standard rack mount. 5.25" height (3 rack) 12" behind mounting surface.

Weight: 40 lbs.

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INTRODUCTION

The Hafler PRO-6000 is a high power, low profile, two channel power amplifier intended for professional sound installations. It is the result of modern packaging combined with the performance and reliability characteristics found in previous Hafler designs. The PRO-6000 has an optimized combination of features needed for a professional power amplifier: high power, small package size, rugged case construction, balanced inputs, continuously variable DC fan for quiet operation, elaborate protection circuitry and four output configurations including normal stereo, stereo plus bridged mono, bridged mono, and dual mono.

OVERVIEW OF AMPLIFIER

The PRO-6000 is a three standard rack height fan cooled design utilizing thirty two MOSFET output devices, over 80,000 micro farads of storage capacitance and a large 1000 volt toroidal transformer. The amplifier has full balanced input circuitry for good noise rejection.

The 19" extruded aluminum front panel includes handles for ease of installation, a main power switch and light and channel indicators for signal present, clipping and thermal or protection shut down. The rear panel has phono, 1/4" phone, and XLR inputs. Output connections are the standard 5-way binding posts. Switches on the back panel include: mono/stereo input, mono/stereo output, floating/chassis ground and balanced/non-balanced input. There are also speaker fuses and level controls for both channels.

The output devices of the PRO-6000 are protected by a sophisticated analog computing system. The device instantaneous temperature is continuously calculated by the computer and compared to the maximum limit. If the limit is reached, the computer cuts back the power and lights the channel's distortion (red) front panel LED. A pair of thermistors, one mounted on each heatsink, measure temperature of the output system. They control fan speed and provide thermal shutdown if temperatures become to high for safe operation. (thermal shutdown turns the power LED red) The fan cooling system is the key to the PRO-6000's performance. The fan is of a very quiet design, with continuously variable speed control. When the amp is cool the fan is off. As the amp is driven harder, the fan gradually turns on and speeds up only to the extent needed to sustain the power dissipation needed for the conditions.

INSTALLATION

MOUNTING:

The front panel is designed to fit a standard 19" rack at 5.25" intervals or alternatively the unit can be stacked. The feet may be removed if desired when rack mounting.

VENTILATION:

Do not block the air flow into or out of the amplifier. Air is drawn in through the heat sink openings on the back panel and exhausted out the fan. Therefore, when rack mounting in a cabinet, allow sufficient space behind the unit and the back of the cabinet. The PRO6000 does not include air filters. Consequently, it is important to clean accumulated dust from the inside of the amplifier by blowing compressed air through the heat sink openings on a regular basis.

CONNECTIONS

AC LINE CORD:

High power output puts heavy demands on the ac supply to the amplifier. A single PRO6000 delivering 4 Ohm related power will heavily load a typical 15 amp circuit. Multiple amplifiers will need to be connected to a circuit capable of delivering the required current (see specifications), in order for the amplifiers to produce the expected audio power.

The PRO6000 is normally wired for 120V 60HZ operation, as in the USA. The transformer can be rewired to accommodate other line voltages upon request.

A 3-wire grounded power cord is supplied. It must be connected to a properly grounded AC receptacle for safety. Do not break off the ground pin on the plug to avoid using the proper adapter for 2-wire receptacles.

SIGNAL INPUTS:

1/4", XLR and RCA jacks are provided on the back panel. These connectors are wired in parallel for each channel, so that either may be used with no further switching. The unused connector may be used to "daisy chain" other amplifiers from the same source using the appropriate jumper cables.

To achieve maximum noise rejection, balanced lines should be used for the inputs (two inverted polarity signal conductors plus a ground shield). The XLR connectors are wired for the IEC International standard, which connects the #1 pin to the ground shield; the #2 pin as the non-inverting or "hot" signal; and the #3 pin as the inverting or "return" signal. The phone jacks are wired with the sleeve as the ground shield; the tip as the non-inverting signal; and the ring as the inverting signal. Note that in other equipment the two signal conductors on the balanced lines are sometimes interchanged from what is stated here-it is therefore wise to check for consistency among the equipment being installed.

For an unbalanced input line the PRO6000 provides a switch to convert the input to non-balanced for use with phono and 1/4" phone jacks.

OUTPUT CONNECTIONS:

The red and black binding posts will accept a wide variety of speaker lead terminations, the most convenient of which are the "banana" plug connectors with 3/4" spacing. Bare wire can be inserted through the holes in the shafts, which are visible when the caps are unscrewed. To be certain that no strands of wire are unsecured, it is best to tin the wire end before insertion. Alternatively, a spade lug soldered to the wire end will make a good connection. Make all connections between loudspeakers and the amplifier with the power shut off to avoid loudspeaker damage.

Select a wire size sufficient to preserve the high damping factor of the PRO6000. The minimum recommended wire size is #16 gauge when high power output is expected. Larger sizes are necessary for long runs, or if the speaker impedance is less than 8 Ohms. When using the amplifier in the stereo mode, be sure to maintain phase integrity between the two loudspeaker channels in order to enable full bass reproduction. Each loudspeaker is connected across one set of black and red terminals.

REAR PANEL SWITCHES AND CONTROLS

BALANCED/UNBALANCED INPUT SWITCH:

The PRO6000 provides for both input configurations.

INPUT SWITCH:

With the switch in its normal "in" position the right input feeds the right channel. In the "out" position the left input feeds both channels. (mono)

OUTPUT SWITCH:

With the switch in its normal "in" position the right channel is in phase with the left. In the "out" position the right channel is reversed in phase compared to the left. (mono)

GROUND SWITCH:

The "in" position is normal floating with the chassis ground separate from the output section ground. The "out" position connects the chassis ground to the output section ground.

LEVEL ADJUST:

Input sensitivity is adjustable with the level controls adjacent to each input pin jack. The overall gain ranges from zero to 36dB.

SPEAKER FUSES:

The PRO6000 is equipped with AGC 20 Ampere speaker protection. These fuses are for speaker protection only. As most speakers will not handle more than a 5-10 Amp load, please refer to your speaker manufacturer's recommendations for your fuse selection.

SPECIAL SYSTEM CONFIGURATION

DUAL MONO:

Both channels are driven by the same signal. (In the PRO6000, the common signal input is the left channel input.) In this mode, both amplifiers are controlled by the left input gain control and put out the same kind of signal and power. This mode is useful if you wish to drive biamplified pairs of speakers with identical signals if the speakers have internal crossovers, or if you wish to drive multiple speakers which would be too low in impedance if driven together. Set the INPUT switch to mono (OUT). This feeds the right channel power amplifier section from the left input signal jack. Connect the speakers the same as you would for standard stereo. Leave all other switches in the standard "IN" position.

BRIDGED MONO:

In order to use both channels of input to sum the signal to drive a mono load, set the INPUT switch to stereo (IN) and the OUTPUT switch to mono (OUT). The amplifier's left channel red binding post connects to the positive (+) speaker terminal and the right channel red binding post connects to the negative (-) speaker terminal.

STEREO PLUS BRIDGED MONO:

Stereo satellites can be driven at the same time as a bridged mono subwoofer or bridged center channel with a PRO6000. Set the OUTPUT switch to mono (OUT). All other switches IN. This inverts the right channel output, while leaving the input stereo. You will connect the left speaker normally, but the right speaker positive(+) and negative(-) will be REVERSED from normal stereo. The center (bridged mono) channel will be connected between the two RED (MONO) amplifier terminals.

OPERATION

APPLYING POWER:

Standard practice is to turn power amplifiers on last and off first in the chain of electronics. This minimizes the likelihood of damage to the load from turn-on and turn-off transients generated by the source equipment. The power LED (far right) will glow green whenever power is applied and the unit is not in "protection". If it does not light, or glows red, check for blown internal AC line fuse or a thermal protective shut down.

FRONT PANEL INDICATORS:

From left to right the front LEDs indicate: left channel status, right channel status and power status. The channel status LEDs indicate the condition of the left and right channel outputs. They will turn GREEN to indicate a signal output of over 200 milliwatts. They will turn RED to indicate distortion over 0.5%THD or if one of the speaker fuses is blown. They will also glow RED if the protection circuitry is cutting back the levels due to excessive calculated output device temperature. As mentioned above, the power status LED will turn GREEN to indicate power on, and will turn RED in the case of a thermal shut down.

FUSES:

The PRO6000 is supplied with an internal 15 Ampere Slo-Blo AC line fuse. For continued protection, replace this fuse only with the same type and rating.

FACTORY SERVICE AND LIMITED WARRANTY

If you have any difficulties or questions concerning your PRO6000 amplifier, please call our Technical Service Department weekdays, 8 a.m. to 4 p.m. Mountain Standard Time, at (602) 967-3565. Should you have any doubts as to whether the amplifier is malfunctioning and requires service, please call us before sending in for repair.

The Hafler PRO6000 is warranted for 3 years from the date of purchase, including parts, labor and return shipping cost from the factory to the owner within the continental U.S.

It is the owner's responsibility to pay shipping (preferably UPS) to the factory; collect shipments will not be accepted. Units under warranty should be accompanied by a copy of the dated bill of sale. Use the original carton and all packing material, and be sure to include a return address. Also give a brief description of the difficulty, including whether it is intermittent.